User Charge Analysis Data Sheets for Sewer and Water Systems

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Introduction

We in the Government Assistance Unit of the Missouri Environmental Assistance Office are very pleased that you want to analyze your user charge system. The analysis will help you figure out where your system is, financially, where you want it to be, and how you can get it there. This process will take some time and effort, but we think it will be well worth your investment to make sure your financial condition is strong. Adequate rates and a secure future will enable you to consistently protect public health and maintain a high degree of environmental compliance and environmental stewardship.

Before launching into a rate analysis, you need to decide how best to get that done. You have choices, such as:
--You can create your own analysis with an electronic spreadsheet, or with a pencil, paper and calculator.
--You can hire a consultant to do a custom analysis for you.
--You might get a regional planning commission or environmental finance center to do an analysis for you.
--Or, you can choose one of the options that follow.

If you represent a Missouri water or sewer system, we will be glad to perform the analysis for you. There are service providers both inside and outside of Missouri who do user charge analysis work as well. Many of them use our Show-me Ratemaker software for their analyses, too. If you represent a non-Missouri system, we can't do the analysis for you, but others can.

We use the Show-me Ratemaker Software as the basis for most of the analyses we do. You may want to consider doing your analysis yourself using this software, too. To examine and get the software, free of charge, visit our Web site at:

http://www.dnr.mo.gov/oac/lgov.htm

Scroll down to the Show-me Ratemaker Software page. The download will probably take you about 10 minutes. You may also want to attend or sponsor one of our Show-me Ratemaker workshops to learn how to get the most from the software, so have a look at our Show-me Ratemaker workshops page as well.

We use the Show-me Ratemaker software for most of our analyses. While that software is used extensively around the country, it is not a direct substitute for the type of documentation that can be accepted by Missouri's Water Pollution Control and Public Drinking Water Programs as a rate setting methodology. Thus, if you constructed or upgraded your water or sewer system using a grant from the EPA Construction Grants Program from 1972 to 1990, a grant or loan from the Water Pollution Control or Public Drinking Water Programs, or if you plan to get one of these grants or loans in the near future, call the Water Pollution Control Program at (573) 751-1300 to learn about their rate setting requirements. Likewise, other states, funding agencies and private lenders may have special restrictions on how you can set your rates, so check with them. Show-me Ratemaker should be able to model what you need, but you need to find out what to model.

The data sheets that follow these instructions can be used for water or for sewer systems with only minor differences in the data you will enter. Where there is a difference, we will tell you.

The rest of these instructions will speak as if we will be doing your analysis. If that is not the case for you, just mentally substitute the name of your favorite analysis service provider in place of us. Your service provider will give you instructions on how to receive service through them.

The analysis process is simple. You write the relevant information in the **dash lined boxes** of the data sheets that follow. Mail the sheets back to us (or to whoever is doing the analysis for you.) We will enter your data into our Show-me Ratemaker software, perform the analysis and, with your guidance, develop proposed user charge rates **for you**. When we have produced rates that appear acceptable to your governing body, we can produce color presentation materials such as tables and pie charts on overhead projector sheets for use in public meetings to discuss the proposed rates. If you would like our help in such meetings, we can assist you or even conduct meetings.

Don't wait to start your analysis, start it now. If you do not have all the information readily at hand that is called for in the data sheets, supply what you can now. Some information, like costs for equipment repair and replacement, are estimates. If you are unsure of unknown information, make your best estimates to start. Once we get the spreadsheet loaded, we can test the importance of your estimates. If a cost item has little influence on the final rates, and if you want to be conservative, we can simply estimate high for those items. As you develop better estimates, we can modify the analysis accordingly.

We strongly suggest you complete an analysis each year slightly before you intend to prepare the next year's budget. In that way, you can use the information generated by the analysis to help you set your sewer and water system budgets more accurately. That will also enable you to adjust your rates when your users are most receptive to a rate change (usually an increase); when you are adopting your budgets. In addition, if anything unusual happened lately to your costs or revenues, or if something will; such as building and financing an upgrade to your system, we suggest you analyze right away so you can handle those situations with a minimum of upset.

With our help and the Show-me Ratemaker software, you can do several things. You can analyze your current user charge rates to see if they are set high enough to produce adequate revenues to cover current costs and obligations and you can see how long that will hold. You can determine if your rates are as equitable and "fair" as possible between user classes. We can print out several sheets that you can use as overheads to demonstrate to your customers at public meetings that rates you propose are more equitable, fair and adequate than your current rates; thus, selling your customers on the need to revise rates. We can produce a projection of your system's financial condition for each of the next five years. If you need to borrow new money, get grants and build new facilities within the next five years, the projection will account for that situation as well.

For your analysis you will need the following information:
- --Customer billing records for the year you want to analyze (the analysis subject year),
- --Your user charge rate schedule, hook up and other relevant fees,
- --Financial records for the year that include the revenues received and the costs incurred,
- --Flow volume,
- --Your equipment repair and replacement schedule, and
- --The annual median household income of your customers
  (if you want us to calculate the affordability index of your rates).

If you changed your rates during the analysis subject year, you need to know the rates before and after the change and when, during the year, you set the new rates.

In the following data sheets you will see blocks outlined with dashed lines like the lines around this paragraph. Please enter the necessary information in these boxes. Add other notes or information as you see fit. We intentionally left numbers in some of the dash lined boxes because they are very typical inflation rates, interest rates, and the like. This information will give you guidance on what to enter and in what form. If a dash lined box has a number in it that is also correct for your situation, just circle it so we will know you want us to use it for your analysis. Otherwise, line through it and write the correct number near it.

If you are not sure of the information you should write in, or for guidance on anything else, you should call us or get our E-mail addresses at:

(573) 526-6627 or 1-800-361-4827
http://www.dnr.mo.gov/oac/lgov.htm#Contacts

Don't be bashful about calling or E-mailing us. Our experience tells us that we will need to communicate with you several times before we can get the analysis finalized. In our experience, few systems have done a full user charge analysis before, so this is probably new territory for you and you will need some guidance.

Below you will find the instructions for the data sheets. Besides telling you what numbers to put in what boxes, the instructions contain information that will help you to better understand how the analysis process works. However, to keep you from suffering from information overload, we have not included everything we will eventually tell you. When we send you the completed analysis, it will include full coverage of the analysis process as well as the complete output from your analysis. For now, **simply write information in the dash lined boxes according to the relevant instructions.**

If you must change your rates, you will need to gain acceptance of your users. Following acceptance, your council or board will need to adopt or revise an ordinance or regulation to make the new rates effective. In all likelihood, you will want or need to make the replacement schedule, cost charts and other charts addenda to your ordinance or regulation. We have model ordinances, including some that were developed for Missouri's State Revolving Fund (SRF) loan programs. Call us for copies or download them from our Home page at:

http://www.dnr.mo.gov/oac/emiapps.htm

Our analysis will include a projection of your system's financial condition for each of the next five years. If you need to borrow new money, get grants and build new facilities within the next five years, the projection will help you decide how much and what kind of funding assistance you will need.

If your fee structure has one rate for volume use, and a minimum charge that may or may not include some volume "given" to each customer, our analysis will be very quick and easy. However, your rate system may be more complicated. For example, you may charge one set of rates to residential customers, another to industrial customers, a third to customers outside of your corporate boundaries, and a fourth to wholesale customers such as a water or sewer district that provides service to retail customers. In that case, you have options. Call our user charge specialist at the telephone number above and they will guide you through the more complicated situations.

Terms Used in This Software:

"Analysis subject year" and "last year" refer to the year you are analyzing, the year for which you have actual cost and income data. In contrast, "next full year" or "next year" refers to the year immediately following the "analysis subject year." In real time, right now should be during the next year.

"Debt Service" is the total cost of acquiring and retiring debt. Thus, in the year you borrow money, if you paid fees to consultants for developing and selling bonds, those costs would be part of your debt service along with any loan payments you make that year. In the year's you make loan payments only, that is your debt service amount.

"Fixed Costs" are those operating costs of the system that do not vary, at least in the short term, whether usage of the water or sewer system goes up or down.

"Income" and "Revenue" are used interchangeably in this software. Technically, income is cash or its equivalent that flows into your system. Revenue is income generated from **operations**. Thus, revenue should make up a substantial part of your income, but it will probably not be all of your income.

"Operating ratio," "net operating income or revenues" and "working capital goal" get at the same basic idea. They refer to the operating funds on hand that are in excess of the amount needed to run the system. Operating ratio excludes debt service costs and is used heavily by lenders. Net operating income and working capital goal include debt service costs and give you the complete picture of your cash flow situation.

"Proportional to use," or more fully, rates that are "proportional and based upon actual use," **for purposes of this software program only,** means this. Proportional rates recover all the system's fixed costs through minimum charges, with no usage allowance or "give away" volume. They recover all the system's variable costs in a unit charge that is the same for all customers. And, they recover all surchargeable costs through appropriate surcharges. Thus, for rates to be proportional, each customer would pay their proportional share of the "availability" or fixed costs for just having the system available for them to use. They would pay their proportional share of the variable costs based upon their actual water volume received or sewer volume contributed to the system. And, if they caused the system to incur surchargeable costs, they would pay those costs through surcharges that fully recovered those costs. (The "proportional to use" concept is simple, its application is not.)

"Surchargeable costs" are not directly related to fixed or variable costs. Rather, they are costs incurred by the water or sewer system for unusual customer services. Examples include fire flow capacity to a limited number of customers in water systems, and exceptional wastewater treatment costs for high-strength industrial or commercial sewer customers.

"User fees," "user charges" and "rates" are used interchangeably. They are the charges you assess on customers of your services, probably billed monthly.

"Variable costs" are those operating costs of the system that do vary as usage of the water or sewer system goes up and down.

"Water," "water usage" and "water services" refer equally to sewer and water utilities. You are providing a water or sewer utility service. Both are different aspects of the same resource; water. The management for both is nearly identical.

"Worksheets" and "charts" are used interchangeably. They are the individual pages of this software program. You access each worksheet by clicking on its tab at the bottom of the screen.

Instructions

A. Customer Usage

When you begin a rate study one of the first things you need to know is "Who is using how much water in an average month?" The most accurate estimates can be developed by gathering information for each month of the year being analyzed, the "analysis subject year." If you use billing software, you can probably print out this information conveniently. Otherwise, review your billing records by hand. Tally user information on the Tally Sheets.

For sewer systems you will need to print out the Tally Sheets and make three copies if you have no 50,000 gallon per month users or Wholesale and Special Customers. If you do have such users, make 12 copies. Either way, you do not need to gather the usage data for most of your regular users during the non-winter months. The "Customer Usage Profile" chart instructions that follow will tell you which users' volumes you can disregard.

For water systems, make 12 copies of this tally sheet and tally usage of all of your users for all twelve months of the year.

Complete one tally sheet for each of the appropriate months, tallying all customers on the sheets. If you have just a few commercial and wholesale customers, just tally them on the second page of these sheets. However, if you have more customer types than will conveniently fit on one set of sheets, use separate sets of tally sheets for each customer class. In that way, you can keep the volumes used by each customer type class separate from the other classes. Call our user charge specialist if you are not sure of how to handle your situation.

Concerning sewer systems, people move in and out, so you will have new accounts to figure volume usage for every year. Even those who stay use different amounts of water over time. Therefore, even if you do not change your rates every year, you should refigure volume usage for each customer every year and use the new figures for billing your customers. If you can get your rate analysis done promptly, you can make rate changes at the same time you start using the new volume figures to calculate users' bills. In this way, users will only experience one rate change instead of two during the year.

To obtain an accurate analysis for large users, it is very important to record actual usage for each customer each month. Users such as schools or seasonal industries can have a wide range of use and cause distortions if not looked at on an actual use basis.

You will need to calculate the average monthly volume usage for all customers of 50,000 or more gallons per month and for the Wholesale and Special Customers. When you have listed usage volumes for these customer classes for all twelve months, add up all of those volumes within each such class. Then, divide that figure by the total number of customers tallied for all twelve months in that class. The result will be the average monthly volume usage for that class of customers. You will enter the information for your Wholesale and Special customers in a special section of the tally sheets. Give each of these classes a descriptive name. (Later, you will enter this information in special boxes in the Usage Profile chart.)

Now, go to the "Customer Usage Profile…" data sheet.

B. Customer Usage Profile

Use the information collected with the Customer Tally Sheet to fill in the Usage Profile chart. Enter the average volume figure you calculated for the "50,000 or More Volume Users" in the dash lined box in the column with the heading "Median or Actual Average Use in Gallons." Do the same for your commercial and industrial users, if you had any, using the descriptive names you gave each class. Also fill in the name of your city, water district or other entity. Fill in the "For the one year period ending:" box with the ending date of the financial year you are analyzing.

Sewer systems do not need to enter data into the shaded boxes of this chart. **However, water systems do**.

If you had unmetered customers, be sure to complete the second page of this worksheet.

Now, go to the "Rate, Starting Balances and Revenues" data sheets.

C. Rate, Starting Balances and Revenues Charts

If you prefer, instead of completing the Rate Chart data sheet, you can just send us a copy of your rate schedule. Be sure it contains the information called for in the Rate Chart. Otherwise, complete the Rate Chart following these instructions.

If you did not change your rates during the analysis year, you will enter your rates from last year in the "Initial Rates" section of the Rate Chart data sheet and write "Same" in the top three boxes of the "Adjusted Rates" section so we will know you did not change your rates during the year.

If you did change your rates last year, you will enter your initial rates. You will also enter your adjusted rates in the "Adjusted Rates" section. In the box in the upper right part of the Rate Chart data sheet, you need to write in the month within the analysis year when you adopted your adjusted rates.

Now, more specifically, enter your minimum charge amount in the first dash lined box under the heading "Monthly Minimum Charge." If you don't have a minimum charge, enter zero.

If you have a single unit charge rate, like $3.00 per thousand gallons regardless of the volume used, enter that rate in the first dash lined box under the heading "Unit Charge per 1000 Gallons for Gallons Within This Class." Put "dittos" in the boxes under that entry so we will know that same rate applies throughout the chart.

Whatever your unit charge rates are for each of the user classes in this chart, enter them. For example, if your unit rates are $3.00 per thousand for the first 5,000 gallons, $2.00 per thousand for the next 5,000 gallons, and $1.00 per thousand for all volume after that, enter $3.00 as the unit charge on the first five lines, $2.00 on the next five lines, and so on. If this is confusing, just call the user charge specialist for guidance.

Referring to the "Wholesale and Special Customers" section of this sheet, if you charge a flat fee for any or all of your customers regardless of the volume they use, proceed like this:

In the "Initial Monthly Minimum Charge" column, on the "Unmetered, Flat Rate Customers" line, enter your initial flat fee amount.

In the "Adjusted Monthly Minimum Charge" column on the "Unmetered, Flat Rate Customers" line, write "Same" if you did not adjust these rates last year. If you did adjust them, write in the new rates.

If you had only unmetered flat rate customers, enter zeros or just write the word "none" in the "Residential and General Customers" section of this chart. Otherwise, write in the appropriate rates.

The "Account Balances at the Start of the Analysis Year" is the next section of this chart. In this section you will enter the starting balances of your various accounts. For "Working Capital Carried Over From Previous Year" enter the balance you had in your operating fund or checking account at the end of the year prior to the year being analyzed. The "Capital Improvements Reserve" includes whatever funds are attributable to capital improvements and long term investments, such as grant and loan proceeds that you have received and not yet spent, "tap fee" amounts that are dedicated to future capital improvements and the like. Do the same for the other account types. Be sure to enter only the amounts that are attibutable to either the sewer system enterprise or the water system enterprise; not both or a combination of any others. Each enterprise needs to stand on its own so we need to know the balances for the separate enterprises. If your funds are combined, you will need to make an arbitrary split and tell us the amounts to attribute to the enterprise being analyzed here.

The next section of this chart is "Actual Revenues Collected During the Analysis Year." In the "User Charges Actually Collected" box, enter the total of all user charges received from your regular customers. Include minimum and unit charges, but do not include surcharges you assess to special customers like high-strength wastewater producers or water customers that you serve with fire flow capacity. That revenue goes in the "Surcharges" box. Keeping these two types of revenue separate will allow us to develop the correct unit charge rate and future revenues for you.

Just below the "Surcharges" line are lines for the number of new hookups or "taps" and your average fee for new hookups. If these "tap fees" are only intended to pay the system's costs to get new users hooked up, show the entire fee amount on the "Average fee charged for new Hookups" line. If, however, you are using part of your tap fees to build a reserve to pay for future capital improvements, which is common in many parts of the country, we need to know that amount, too. You don't want those fees to show up in your operating fund because they are capital improvement funds. Thus, show the entire fee amount on the "Average fee charged for new Hookups" line, **AND**, enter the capital improvements part of this fee in the box to the right of the hookup fee amount box. We will make the adjustments for you to calculate how much you deposited last year in your capital improvements reserve from tap on fees and to project future capital improvement deposits you will make.

Concerning "Withdrawals From Debt Reserve," during the analysis year, if you "borrowed" money from your debt reserve account, show that amount here. Otherwise, enter a zero. Do the same on the next line for "Withdrawals From Other Cash Reserves" if you have other cash reserve accounts and borrowed from them. If you supplied water to others on an irregular basis, such as bulk water haulers; you accepted septage for treatment from septic tank pumpers; you rented out or sold equipment; etc., enter that income in the "Other Income" box and describe it. Our analysis will use all of these figures.

The last section of this chart is "Annual Median Household Income (AMHI)." This is important information, especially if you are going to apply for grants or loans. It will be used to determine how affordable your current and any proposed new rates would be for your customers.

You can determine median household income in several ways. You can do an income survey of your users. That is difficult and time consuming and the accuracy level may not be worth the effort unless you are seeking a Community Development Block Grant (CDBG) or a USDA Rural Development grant. Alternatively, call the Missouri Department of Economic Development, Community Development Block Grants Program at (573) 751-4146 and ask them to check their income tables for you. Software users in other states can call their Census Bureau for this information. Missouri users who like to use the Internet can get county-wide census information from this Web address:

www.oseda.missouri.edu/countypage

After getting on this Web site, click on your county, then click on "Income and Poverty Profile." Scroll down to "Median Household Income." If the users on your system are like those in the rest of your county, the income figure you find on this site will be adequate for the purposes of this analysis. The table shows incomes for several different years. To estimate your current AMHI, you need to figure out how quickly your incomes have been growing (or decreasing) recently and project that to this year. Enter that income estimate in this chart and also enter the growth rate percentage you just calculated, as well. If you think your incomes will grow (or decrease) faster or slower than they have recently, enter some other rate.

Now, go to the "Repair and Replacement Schedule" data sheet.

D. Repair and Replacement Schedule

This schedule helps you examine your system's costs. Our analysis will show you how much money you need to set aside each year to be able to make scheduled major replacements and repairs in the future. Some systems have no written repair and replacement schedule. If that is true for your's, you should have your engineer or an experienced chief operator develop one for you. Then, enter that information into this chart.

What items should you include in the Repair and Replacement Schedule? That depends on how big and complicated your system is, how financially fit your system is and more. Generally, if a repair item happens every year and it costs about the same each year, include that cost in the Operating Costs worksheet later. If the item is so costly that you will get a grant and/or sell bonds to pay for it, include that cost in the Capital Investments and Reserves worksheet later. For all those repair and replacement items in between these two, include them in the Repair and Replacement Schedule.

First, estimate the inflation rate you expect for major repair and replacement of your equipment, and interest rates you expect to be able to receive for investing your reserves for the next several years. We have been using 4 percent and 5.5 percent, respectively, for these rates. Enter your figures at the top of this schedule.

Most water and wastewater systems are designed for a 20 year expected useful life. Start this schedule at year 1; your analysis subject year. In year 1 you will enter repair and replacement costs you actually paid last year. You will estimate your costs for all future years. Enter equipment and cost information up to the last year of the expected useful life of your system and leave later years blank. At the bottom of this schedule, enter the minimum balance, in today's dollars, that you would always like to have on hand just in case some extra large expense crops up unexpectedly. We will project how much you will need to deposit each year to cover your repair and replacement costs and still maintain your desired minimum balance. If you have equipment or facilities that will go beyond 20 years, just continue this chart on another piece of paper.

If you have multiple items for a year, you will need to list out all the items in the description column, calculate the total dollars for that group of items and enter that amount in the "Cost per Item" column, and enter "1" in the "# Items" column. For example, if you will replace four of the same items in one year, describe the item, list the cost for one item and place a "4" in the "# Items" column. We will calculate the "Yearly Total" cost of all multiple items.

Now, go to the "Operating Costs" data sheet.

E. Operating Costs

When you have a water or sewer system there are costs that do not depend on the level of use of the system. These are commonly referred to as fixed costs. Insurance, bonding, administrative costs like billing and mailing and staff time to do adminstrative work are usually considered fixed costs. In essence, this is the "availability cost" of being able to turn on the tap and get water, or flush the toilet and have the water go away. Whether you actually turn on the tap or flush the toilet, the availability costs must be paid. Normally, these fixed costs are billed to all customers equally in a minimum charge.

Variable costs happen because the system gets used. Examples include electricity to power the pumps and chemicals to treat the water. The more volume a customer uses, the more variable costs they should pay. These charges are usually assessed to users on a unit rate basis.

Some costs do not neatly fall out as fixed or variable, they are a mix of both. For example, you might consider part of the debt service cost of your system as fixed because it costs a certain minimum amount just to make the service available. Above that amount, the cost becomes variable. How you split these kinds of costs is up to your reasonable judgement. Keep in mind, the more costs you allocate to your minimum charge, the less affordable your rates will be to the low-end users, those who are generally least able to pay.

A third kind of cost relates to the cost to treat high-strength or difficult to treat wastewater, high peak flow water demands such as fire flow volume capacity, etc. These charts don't do a detailed breakdown of these costs because they are very situation specific. However, you can enter your estimated total for these costs and we will project from that figure. Note: these costs relate to **SURCHARGEABLE CUSTOMERS ONLY, NOT** residential customers.

These charts allow you to separate your costs into fixed, variable and surchargeable costs. The first six or seven cost items are generally fixed cost items. The items that follow those are generally completely or largely variable cost items.

Enter your expense amounts in the Operating Costs chart. Make sure you include all costs of the system and split them reasonably between fixed and variable costs. For example, your clerk spends 25 percent of his time doing billing, collections and the like for the system and 75 percent of his time on other city business. Determine the dollar value of the clerk's time including benefits, take 25 percent of that, and enter that dollar amount on the "Salaries and benefits for Administration Staff" line.

If your manager and finance director spend part of their time administering the system as well, figure the dollar values of their time for the system, add those amounts to the clerk's dollar value and enter the total amount on this line. In the "Fixed Cost Percentage for Each Item" column, enter 100, meaning 100 percent of their time working for the system is a fixed cost to the system. Enter all other costs in this fashion. Further down the chart, you will begin entering zeros or other small numbers in the "Fixed Cost Percentage for Each Item" column because these items are oriented more toward operations, which are variable costs.

Similarly, if you have a clerk who takes care of billing, collections, recordkeeping and the like housed in your office, that part of the office operation and utilities attributable to the system's administration should be billed as a cost to the system. You probably will also want to allocate this item as 100 percent fixed.

The chart has lines for "Debt Repayment and Related Expenses" and "Debt Reserve Payments." You **must** cover debt repayment, if you borrowed money for the system. (Likewise, if you "borrowed" in the past from "Other Reserves," show the amount you repaid last year to that account.) Your lender or bond buyer probably also required you to establish a debt reserve account. Reserve levels are commonly set at 10 percent of the outstanding principal balance. You may have been required to over-borrow to establish your reserve account immediately, or you may have been allowed to make payments to the reserve account until it is fully funded. If you are making payments to that fund, show them in the "Debt Reserve Payments" box.

The Loading and Cost Allocations section at the bottom of this chart has its own set of directions.

Up to this point…

...the data sheets have been concerned mainly with the past; how much it cost to run your system during the last full year, how much revenue you brought in, and so forth.

Before you move into the final sheets, recall that the information you have entered so far is actual, historical information. Now you need to go back and consider the information you have entered so far. Were the costs and revenues you experienced last year typical? Did you do major repairs and equipment replacements as planned, or did something unusual happen? If a cost or revenue item was not typical, go back to that item and determine what adjustments you would need to make to get your costs or revenues back to what they normally would have been. Keep those adjustments in mind. You will need to show them on the final two sheets so we can make adjustments to your costs and revenues and correctly project your future financial condition.

Now, go to the "Costs and Revenues..." data sheet.

F. Costs and Revenues, 5 - Year Projection

The final sheets have line numbers that we will refer to below. The numbers are not consecutive because we only included those lines from the Show-me Ratemaker software that are informative to you now, or those lines on which you need to enter data.

This worksheet does not have a place for you to write in your expected future rate revenues and several other things that are future-oriented. That is because the analysis will make projections and produce that information for you.

If any cost or revenue amounts for future years need to be different from the analysis subject year's amounts (not including inflation), just write the new amount in the appropriate box for that year. Unless you are planning a big change, like replacing your current treatment plant in a future year, you probably don't have a good way to judge what adjustments you may need to make beyond "This Year." Thus, enter new amounts for "This Year" and leave the later years' boxes blank unless you are pretty sure of changes that are needed. As we run the analysis, we will be able to see many of the adjustments that will be needed in the future and we will discuss those with you.

On line 2, enter the growth rate of new customer hook ups you expect to make during the next five years. These are new hook ups, not reconnects. If it will be the same as last year, just tell us that. If your customer base is decreasing, remember to enter the number as a negative (-) value. This is an important number. If your community is growing quickly, hookup administration and inspections will be a major operating cost for you, and hookup fees should be a major source of revenue. Likewise, your operating costs and user fees will both grow quickly in the near future. If your hookups are declining, your costs will probably continue to climb but your revenues will decline unless you increase rates.

Enter on line 9 whatever average hookup fee you plan to charge in the future. Write "Same" if you plan no change. The worksheet will begin using the new fee two years after the analysis subject year. Your hook up fees should at least cover your costs in getting users hooked up to your system: applications, inspections, re-inspections, filing and office work, etc.

On line 10, enter your best estimate of other charges you will collect. Remember, if you have many slow or non-paying customers, or if you raise your rates much, you may need to raise your late payment charges, too.

On line 11, there is only one good reason for withdrawing capital improvement reserve funds to pay for operating costs. That is when you have analyzed your future capital improvement needs and found that you have been maintaining an excessive capital improvements reserve. Therefore, you need to draw it down to a more reasonable level. That situation is so unlikely that... It is more likely that you have not maintained adequate operating reserves in the past and now you must draw down capital improvement reserves to pay operating costs. On this line, enter the amount needed to make up your operating revenue shortfall, but be aware of three things. One, "borrowing" from capital improvement reserves is a sure sign that your rates are set too low. Two, you may at least be breaking one of your bond agreements, if not a state regulation or statute. Three, you cannot draw more from this reserve than the amount it contains.

On line 12, enter the amounts you plan to withdraw from your "Debt Reserve" accounts during each year for operating expenses. If you plan to make no withdrawals, which is what you should be planning on doing unless you are near the end of your debt payments, enter zeros. The cautions for capital improvement reserves also apply to debt reserves. Be aware that if you withdraw from debt reserves for a purpose not allowed in your bond agreement, you will likely be in technical default of your loan.

On line 15, enter the amounts you plan to withdraw for operating costs from your "Other Reserves."

On lines 16 and 17, enter any other income you expect and describe it. This may include general revenue transfers; revenue from renting or leasing meeting rooms or equipment; providing services, selling old equipment; and any other means you plan to generate income.

Line 20 starts the cost items. (These are the same items covered in the Operating Costs chart.) Most of these items use an inflation factor. We have entered normal or conservative inflation rates. Change them as you see fit. If inflation will be the only cost change you expect, just leave the following boxes blank. However, if a cost item will change markedly from what you experienced last year, enter the new cost amount in the year it will change. For example, if you will bring a new treatment plant on line in the third year and it will be significantly more expensive to operate than your current plant, in the third year show the new operating costs. If you don't know the individual costs, but you can estimate that the plant will cost $20,000 more per year to operate than your current plant, simply enter this difference on one of the lines 40 through 43 and describe what it is. If your costs will go down, but sure to enter the adjustment as a negative (-) number.

On lines 25, 26 and 27, enter new payment amounts, if your payments will be changing during the next five years. Otherwise, leave these lines blank.

Lines 26 and 27 are reserve account deposits. Normally, you will make deposits of equal amounts to such accounts for a fairly long time. However, eventually, you will change your deposit amounts. Occasionally, you will actually draw down the accounts. Calculate the net deposit you will make to these accounts. If they are different from last year, enter the new amounts. If you make no net deposits during a year, enter a zero. These reserve balances will be adjusted each year according to the net withdrawals and deposits you make.

Line 38 covers the cost to provide service to customers with high peak flows, seasonal usage, etc. Your surchargeable costs may be larger than you think. If you think this could be a significant amount, make a cost estimate. If that yields significant costs to your system, enter your cost estimate in the dash lined box in the "This Year" column. You need to follow this up with sampling or estimates of each surchargeable customer's water use to determine who should pay surcharges, and how much.

Line 39 is similar to line 38. Both of these items were originally covered in the Loading and Cost Allocations section of the Operating Costs worksheet.

Lines 40 through 43 are multi-purpose lines for adjusting operating costs. This is how to use them. You have already established your current costs. Say, however, in three years you will replace your current treatment plant with a new one and its operating costs will be higher than your current one. To account for that change, simply figure the additional operating costs associated with the new plant and enter that amount in the column three years from now. If your future costs will go down, show that number as a negative (-) entry. In the inflation factor column, enter the average inflation rate you expect for this item.

On line 47, you will set your working capital goal as a percentage of your operating costs. Working capital is the amount of funds you have on hand in excess of the costs of running your system. These funds are available just in case you have unexpected operating costs or a drop in revenues. About 15 percent is a normal goal for larger systems, those above 5,000 users. Smaller systems, those below 1,000 users, may need up to 50 percent. The higher you set your goal, the more cushion you will have to guard against downturns or unexpected costs.

Now, go to the "Capital Investments and Reserves..." data sheet.

G. Capital Investments and Reserves, 5 - Year Projection

This worksheet deals with capital investments like building a new treatment plant or upgrading your system.

Line 51 starts the sources of funds for capital improvements. Enter the amounts you expect to receive from various sources. Funds never seem to arrive as soon as you would expect, so be conservative on the amounts and timing of fund receipts.

On line 56, you will enter donations, prepayments and other non-loan contributions from customers and others.

On lines 57 and 58, enter the grant and loan amounts you expect to receive in the years you expect to receive them. Grant and loan funds from state and federal agencies are generally disbursed shortly after you incur the eligible costs. Proceeds from the sale of bonds on the market are received whenever you sell them. If you will pay loan origination fees or any other costs out of proceeds from your bond sale, show only the net proceeds you will actually receive. It would also be useful to name the sources of funds and briefly describe them. For example, "CDBG at 35%" and "Bonds at 13%." That means 35 percent of the project cost would be paid by a CDBG grant, and 13 percent by a bond sale.

On line 59, enter the amounts you will obtain from other reserves.

On line 60 and 61, enter the amounts you will obtain from general revenue transfers or any other source. If you charge users a capital improvements "tap fee," we will calculate those amounts and enter them on this line in the software when we do the analysis for you.

Line 63 starts the uses you will put your capital improvement funds to. To be conservative, try not to under estimate these amounts or you will come up short in the middle of a project and have to scramble to find new funds or cut costs.

On lines 67 and 68, list the estimated costs for capital improvements in the years you expect to incur them.

On line 69, list the costs to develop non-infrastructure programs. These may include newsletters, workshops, radio spots and other means of getting information to your customers about water conservation, do's and don'ts of what to put down the sewer drain, etc. A little money spent on educating your customers may reduce your infrastructure and operating costs significantly. Remember, your goal is not to maximize water supplied or wastewater treated. Rather, your goal is to provide the most appropriate and economical services possible. Helping your customers learn how to treat their water services facilities better, conserve water, use less of your services and reduce their costs is your overall objective. Doing so also shows the community you are being good stewards of the systems and the funds they entrust to you.

Line 70 is for any other capital expenditures you cannot fit in somewhere else.

Line 72 starts a section that is new debt or new debt related expenses. If you have existing debt that will continue into the future, you already entered that existing debt in the Operating Costs chart and the Costs and Revenues worksheet. The future costs of existing debt carry over into the Costs and Revenues worksheet as operating costs and are not considered new debt. In the "New Debt Obligations..." section, enter only new debt payments that you started making this year, or that you will start paying within the next five years.

On line 73, if customers lent you money to establish your utility, prefund part of an upgrade or the like, list the amounts you will repay them in each of the next five years. If customers or others made a donation you will not be repaying, you do not enter those amounts here. Rather, they go on line 56.

On lines 74 and 75, be aware that these payment amounts are only for new debt. If you have debt and debt reserve payments from previous borrowing that will carry into the future, do not include those payments in these figures. However, if you will have more than one future loan, add those debt payments together and enter the totals in the appropriate years. Do the same for debt reserve payments. It would also be useful to enter the loan term, rate, and other identifying information for later reference.

On line 76, enter the dollar amount of loan origination fees, attorney fees and all other costs you paid with your own funds, not with proceeds from the bond sale, to develop and sell the bonds above and describe them. List these fees in the year you will incur them.

On line 77, enter the payment amounts for any other obligations you will incur. For example, if you lease-purchase some equipment, show those payments here.

You are now done with your data entry.

Final Instructions and Conclusion

Return to the earlier charts and second guess yourself. Ask yourself, did I classify all costs correctly? Did I include all revenues? Did I include all the major equipment repairs and replacements that I can expect? If all is in order, your sheets are ready for mailing.

When your data sheets are completed, detach the instructions, copy the data sheets, retain a set for yourself and mail a set to the address below. If another service provider is performing the analysis for you, be sure to mail these sheets to them and not to us. After receiving your data sheets, we will probably call you within a few days to verify some of the information. Once we have all the necessary information, we should be able to do the analysis and send you results within a few more days. It probably will show that you need to adjust your rates, so very soon, you will be able to do that and get your system back on firm financial footing.

Thank you for getting your user charge system analyzed.

The analysis will help you "sell" rate adjustments to your governing body and your ratepayers. Adjusting your rates frequently and when needed will help you maintain healthy finances, and if set properly, assure fair rates to your customers. In turn, adequate funding will enable you to operate the facilities to provide dependable, safe and healthful service to your citizens. All of this will enable you to maintain excellent environmental safeguards.

Missouri
Department of
Natural Resources

Environmental Assistance Office
Government Assistance Unit
P. O. Box 176
Jefferson City, MO 65102
Phone: (573) 526-6627 or 1-800-361-4827
Fax: (573) 526-5808
Home Page: http://www.dnr.mo.gov/oac/lgov.htm
E-mail Addresses: http://www.dnr.mo.gov/oac/lgov.htm#Contacts

Copy this sheet and write data in the dash lined boxes.

Tally Sheet for Residential and General Customers

For the Month of:

Conversion factor:
1 cubic foot = 7.48 gallons

Missouri Department of Natural Resources

Cubic Feet Equivalent for Each Class	Usage for the Month in Gallons	Number of Customers Using This Amount	Total Customers in This Usage Class
Under 134	Under 1,000	=	
135 - 267	1,000-1,999	=	
268 - 401	2,000-2,999	=	
402 - 535	3,000-3,999	=	
536 - 668	4,000-4,999	=	
669 - 802	5,000-5,999	=	
803 - 936	6,000-6,999	=	
937 - 1,069	7,000-7,999	=	
1,070 - 1,203	8,000-8,999	=	
1,204 - 1,337	9,000-9,999	=	
1,338 - 2,005	10,000-14,999	=	
2,006 - 2,674	15,000-19,999	=	
2,675 - 4,011	20,000-29,999	=	
4,012 - 5,348	30,000-39,999	=	
5,349 - 6,684	40,000-49,999	=	

See back of sheet

Tally Sheet for High Volume, Wholesale and Special Customers

(You charge the Wholesale and Special Customers special rates or surcharges, so they don't fit conveniently with general customers.)

Missouri Department of Natural Resources

Name of Customer Class		Volume Used by Each Customer (List actual usage during this month for each customer)	Total Customers in This Usage Class
High Volume General Customers			
6,685 + Cubic Feet	50,000 or more gallons per month	_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, = _____ (don't miss any)	
Commercial 1		_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, = _____ (don't miss any)	
(Give class a descriptive name)			
Commercial 2		_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, = _____ (don't miss any)	
(Give class a descriptive name)			
Industrial 1		_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, = _____ (don't miss any)	
(Give class a descriptive name)			
Industrial 2		_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, = _____ (don't miss any)	
(Give class a descriptive name)			
Unmetered, Flat Rate Customers		=	

Write data in dash lined boxes. Water systems, fill all the dash lined boxes. Sewer systems, fill only the unshaded boxes.

Customer Usage Profile for a Water or Sewer (circle one) System

Name of city, district, or community:

Contact person, phone number, E-mail, etc.

For the one year period ending:

Missouri Department of Natural Resources

Number of Users in Each Usage Class, Each Month:

Customer Class (use per Month in Gallons)	Median (or Actual Average) use in Gallons	January,	February,	March,	April,	May,	June,	July,	August,	September,	October,	November,	December,
Residential and General Customers													
Under 1,000	500												
1,000-1,999	1,500												
2,000-2,999	2,500												
3,000-3,999	3,500												
4,000-4,999	4,500												
5,000-5,999	5,500												
6,000-6,999	6,500												
7,000-7,999	7,500												
8,000-8,999	8,500												
9,000-9,999	9,500												
10,000-14,999	12,500												
15,000-19,999	17,500												
20,000-29,999	25,000												
30,000-39,999	35,000												
40,000-49,999	45,000												
50,000 or more													
Wholesale and Special Customers													
Unmetered, Flat Rate Customers	See Below												

Information for Unmetered Customers

Missouri Department of Natural Resources

Section 1. If you have ONLY unmetered flat rate customers on your system, and you metered the volume that passed through your system, proceed like this. (Otherwise, disregard this section and skip to Section 2.)

In the previous chart, line through or enter zeros in all the dash lined boxes except for the "Unmetered, Flat Rate Customers" line. On that line, enter the number of flat rate customers you had during each month.

Refer to your volume monitoring reports. From those reports, total up your flow (volume that you pumped into your water distribution system, or volume that flowed into your wastewater treatment system) last year. Now, enter that total in the dash lined box below.

_____ **Total Annual System Flow in Gallons**

Section 2. If you have BOTH metered customers, and unmetered flat rate customers on your system, or if you don't know the total volume that flowed through your system, proceed like this. (Disregard Section 1 above.)

Enter your best estimate of the monthly volume used by your average unmetered customer in the dash lined box below.

_____ **Average Unmetered Customers Volume Usage**

Finally, if you don't monitor your flow, you should start as soon as possible. Metering is relatively cheap to do, it pays for itself quickly, it encourages water conservation and it will help you monitor use of your system, line leakage and the like.

Write data in the dash lined boxes.

Rate Chart

Missouri Department of Natural Resources

Month you adjusted your rates (see instructions):

Customer Class (use per Month in Gallons)	Initial Rates: Initial Monthly Minimum Charge	Initial Rates: Initial Minimum Charge Usage Allowance in Thousands	Initial Rates: Initial Unit Charge per 1000 Gallons for Gallons Within This Class	Adjusted Rates: Adjusted Monthly Minimum Charge	Adjusted Rates: Adjusted Minimum Charge Usage Allowance in Thousands	Adjusted Rates: Adjusted Unit Charge per 1000 Gallons for Gallons Within This Class
Residential and General Customers						
Under 1,000						
1,000-1,999						
2,000-2,999						
3,000-3,999						
4,000-4,999						
5,000-5,999						
6,000-6,999						
7,000-7,999						
8,000-8,999						
9,000-9,999						
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000-49,999						
50,000 or more						
Wholesale and Special Customers						
Unmetered, Flat Rate Customers						

Missouri Department of Natural Resources

Account Balances at the Start of the Analysis Year

Working Capital Carried Over From Previous Year	
Capital Improvements Reserve	
Debt Reserve	
Other Reserves	
Repair and Replacement Reserve	

Actual Revenues Collected During the Analysis Year

	Working Capital Carried Over From Previous Year		
	User Charges Actually Collected (minimum and flow charges, but not surcharges)		
	Surcharges		
		New Hookups Made During Year	How much of the average hookup fee at left is for future capital improvements?
		Average fee charged for new Hookups	$
	Total Hookup fees collected		
	Other Charges (late payments, forfeited deposits, etc.)		
	Interest Earned on Deposits		
	Withdrawals from Debt Reserve		
	Withdrawals From Other Reserves		
	Other Income	Describe	
	Other Income	Describe	
	Total Revenues Actually Collected (This calculation is optional, but you may want to run this number to cross-check against your budget)		

Annual Median Household Income (AMHI)

	AMHI for your city, district or other chosen area
	Rate of growth in AMHI for your chosen area

Write your data in dash lined boxes.

Repair & Replacement Schedule

	Predicted Inflation Rate for Next Five Years
	Predicted Interest Rate for Next Five Years

Missouri Department of Natural Resources

Year	Replacement Item (or Group) Description	Cost per Item (or Group)	# Items
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
	Minimum Desired Balance in Future Years in Today's Dollars		

Notes:

Write your data in dash lined boxes.

Operating Costs

Missouri Department of Natural Resources

Item	Total Annual Cost for Each Item	Fixed Cost Percentage for Each Item
Salaries & Benefits for Administration Staff		100%
Billing, Office Operation & Utilities, Rent & Other Overhead		100%
Insurance & Bonding		100%
Accounting, Legal, Engineering & Other Professional Services		100%
Debt Repayment & Related Expenses		50%
Debt Reserve Payments		50%
Other Reserve Payments		0%
Salaries & Benefits for Operations Staff		0%
Electricity & Utilities for Operations		0%
Operating Supplies & Equipment		0%
Chemicals		0%
Equipment Leases		0%
Regular Maintenance & Repairs		0%
Auto & Other Rolling Stock		0%
Permits, Training		0%
Taxes, Franchise Fees		0%
Payment to R & R Account	Calculated Elsewhere	0%
Surchargeable Services (Adjustment)	Calculated Elsewhere	N.A.
Infiltration/Inflow or Water Loss (Adjustment)	Calculated Elsewhere	N.A.
Other Costs (Describe)		
Other Costs (Describe)		
Other Costs (Describe)		

Loading and Cost Allocations (Use the directions appropriate for your system type)

Sewer System Directions	Enter Cost or % Here	Water System Directions
1. Old systems can have 30 to 50 percent or more of Infiltration/Inflow (I/I). Even new systems have some I/I. On this line enter the estimated rate of I/I for your system.		1. Old systems can have 30 to 50 percent or more of water loss and use that is not billed to customers. This includes leaks, under-registration by water meters, water use for line flushing, etc. On this line enter the estimated rate of water loss for your system. Also, make note of how much is used for system maintenance.
2. Since it is fairly clear water, I/I is usually less costly to treat than full strength wastewater. Most systems can transport and treat I/I for about 40 percent of the cost of full strength wastewater. On this line enter the percent between 0 and 100 for your system.		2. Generally, it costs about as much to produce and distribute lost water as water that is used and paid for. If that is true for your system, enter 100 on this line. Otherwise, enter a lower percentage.
3. Frequently, 100 percent of I/I costs are allocated to fixed costs. If that is your choice, enter 100 on this line. Otherwise, enter your desired percentage between 0 and 100.		3. Frequently, 100 percent of lost water costs are allocated to fixed costs. If that is your choice, enter 100 on this line. Otherwise, enter a lower percentage.
4. Surchargeable high-strength wastewater is wastewater that is stronger than normal for your system. "Normal" is usually considered to be domestic wastewater. If you have high-strength wastewater customers that you charge surcharges to, or that you could, enter your estimate of the costs to treat this wastewater on this line. If you have no surchargeable customers, enter a zero.		4. Surchargeable water services may include fire flow volume capacity for certain customers, excessive or peak flow capability such as oversized lines, pumps, etc. to serve high peak flow customers like industries, high summer use by customers that irrigate large lawns, and other unusual customer needs. If you have customers that you charge surcharges to, or that you could, enter your estimate of the costs to provide those special services on this line. If you have no surchargeable customers, enter a zero.

Note:

When there are no or few surchargeable customers, most systems assign all production, treatment and distribution costs (water systems), or collection and treatment costs (sewer systems) to flow only, to keep rates simple.

Write your data in dash lined boxes.

Costs and Revenues, 5 - Year Projection

Line #	Operating Cost and Revenue Items	Inflation Factor %	This Year	Next Year	3rd Year	4th Year	5th Year
2	Expected Annual Increase in Customers (%) for Next Five Years (Show decrease as negative)						
4	**Operating Incomes (If you plan no specific changes to operating revenues, write in nothing. Otherwise, write in or describe the new revenue amounts.)**						
9	Future Average Hook up fee						
10	Other Charges (late payments, forfeited deposits, etc.)						
11	Transfers From Capital Improvements Reserve						
12	Withdrawals From Debt Reserve						
15	Withdrawals From Other Reserves						
16	Other Income (Describe)						
17	Other Income (Describe)						
20	**Operating Costs (If operating costs will change ONLY with inflation, write in nothing. Otherwise, write in or describe the new costs.)**						
21	Salaries & Benefits for Administration Staff	5.0%					
22	Billing, Office Operation & Utilities, Rent & Other Overhead	5.0%					
23	Insurance & Bonding	5.0%					
24	Accounting, Legal, Engineering & Other Professional Services	5.0%					
25	Debt Repayment & Related Expenses	N.A.					
26	Debt Reserve Payments	N.A.					
27	Other Reserve Payments	N.A.					
28	Salaries & Benefits for Operations Staff	5.0%					
29	Electricity & Utilities for Operations	5.0%					
30	Operating Supplies & Equipment	5.0%					
31	Chemicals	5.0%					
32	Equipment Leases	5.0%					
33	Regular Maintenance & Repairs	5.0%					
34	Auto & Other Rolling Stock	5.0%					
35	Permits, Training	5.0%					
36	Taxes, Franchise Fees	0.0%					
37	Payment to R & R Account	5.0%					
38	Surchargeable Services (Adjustment)	5.0%					
39	Infiltration/Inflow or Water Loss (Adjustment)	5.0%					
40	Cost Adjustments (Describe)	5.0%					
41	Cost Adjustments (Describe)	5.0%					
42	Cost Adjustments (Describe)	5.0%					
43	Cost Adjustments (Describe)	5.0%					
47	**Working Capital Goal is:** %						

Write your data in dash lined boxes.

Capital Investments and Reserves, 5 - Year Projection

Missouri Department of Natural Resources

Line #	Investment and Reserve Items	This Year	Next Year	3rd Year	4th Year	5th Year
51	**Sources of Funds (Enter amounts in years you will receive them.)**					
56	Cash Contributions From Customers and Others (Describe)					
57	Grants (Describe)					
58	Loans (Describe)					
59	Other Reserve Withdrawals (Describe)					
60	Other Fund Sources (Describe)					
61	Other Fund Sources (Describe)					
63	**Use of Capital Improvement and New Debt Funds**					
65	Capital Improvement Plan (CIP) Expenditures (Enter amounts in years you will pay them. Exclude costs entered in Costs and Revenues worksheet)					
67	Project 1 (Describe)					
68	Project 2 (Describe)					
69	Non-facility Costs to Develop Conservation, Education, and Similar Programs					
70	Other Uses of Funds					
72	**New Debt Obligations (Enter amounts in years you will pay them. Exclude debt entered in Costs and Revenues worksheet.)**					
73	Repayments to Customers and Others					
74	Debt Service (Borrowed amount _____, interest rate ____, for ___ years, other terms?)					
75	Debt Reserve Payments (_____ % of loan balance)					
76	Fees for New Loans (_____ %) or $ _____ amount					
77	Other Obligations (Describe)					